

Application No. 10/519,078
Art Unit: 2872

Amendment under 37 C.F.R. §1.111
Attorney Docket No.: 043115

AMENDMENTS TO THE DRAWINGS

Please amend Figs. 8-10 of the drawings in accordance with the attached replacement sheets of drawings. Figs. 8-10 have been labeled as Prior Art. Fig. 8 has also been amended to correct a reference numeral. No new matter has been added.

REMARKS

Reconsideration of this application, as presently amended, is respectfully requested. Claims 1-7, 9-12 and 15-17 are pending in this application. Claims 1-5 stand rejected. Claims 6-7, 9-12 and 15-17 were withdrawn from consideration as being directed to a non-elected invention.

You will note that we have proposed amendments to withdrawn claims 6-7, 9-12 and 15-17. These amendments simply correct minor informalities. Although claims 6-7, 9-12 and 15-17 are withdrawn from consideration, it is possible that the Examiner will rejoin these claims if a generic claim is found to be allowable. Accordingly, we have amended these claims so that they are in good form in the event the Examiner rejoins these claims.

Objections to the Drawings

Figs. 8 and 9 were objected to because they are not designated by a legend such as "Prior Art". Figs. 8 and 9, as well as Fig. 10, have been amended to label these figures with the legend "Prior Art".

Further, Fig. 8 of the drawings was objected to because reference character "706" has been used to designate both a "specimen" and "infrared light". Specifically, as seen in Fig. 8, there are two reference numerals "706" referring to different elements. As noted by the Examiner, the specification refers to both the "specimen" and the "infrared light" using the reference numeral "706" (see page 3, lines 9 and 12).

Fig. 8 has been amended to change the reference numeral referring to the “infrared light” from “706” to “707”. Further, page 3, paragraphs [0009] and [0010], of the specification has been amended in a manner consistent with the changes to the drawings to change “infrared light 706” to --infrared light 707--.

Approval and entry of the changes to the drawings are respectfully requested.

Objection to the Specification

The Abstract of the Disclosure was objected to because of undue length. According to USPTO rules, the Abstract of the Disclosure should contain no more than 150 words. The Abstract of the Disclosure has been amended such that the Abstract now has a length of 148 words.

Further, the disclosure was objected to because of informalities. More specifically, the Examiner asserts that the specification states “near-filed” instead of --near-field-- throughout (e.g., page 5, line 5). Applicants have reviewed the specification and changed “near-filed” to --near-field-- on page 5, line 6; page 6, line 11; and page 8, line 25 of the specification.

Further, applicants noted a few additional very minor typographical errors in the specification. More specifically, on page 10, line 33, “intedgeed” has been changed to --intended--; on page 12, lines 24 and 27, “bedgeing” has been changed to --bending--; on page 16, lines 9 and 31, “depedgeing” has been changed to --depending--.

Approval and entry of the changes to the specification are respectfully requested.

Claim Objections

Claims 1-5 were objected to for informalities. More specifically, the Examiner asserts that the recitation “a near-filed” in claim 1 should be changed to --a near-field--. The claims have been amended to change “a near-filed” to --a near-field--. Further, additional minor amendments have been made to improve form in accordance with preferred U.S. practice.

Claim Rejections – 35 U.S.C. §103

Claims 1-2 and 5 are rejected under 35 U.S.C. §103(a) as being unpatentable over **Osawa et al.** (JP 05027180 A) in view of **Zhang et al.** (USP 6,977,379) and **Corle et al.** (USP 5,121,256). Claims 3 and 4 are rejected under 35 U.S.C. §103(a) as being unpatentable over **Osawa et al.** in view of **Zhang et al.** and **Corle et al.** as applied to claims 1 and 2 above and further in view of **Ferrell et al.** (USP 5,018,865). For the reasons set forth in detail below, these rejections are respectfully traversed.

The Examiner relies on Figs. 1 and 2 of **Osawa**. As shown in Fig. 1, **Osawa** discloses a near-field scanning microscope having a hemispherical sample base 17 for supporting a sample 1. The sample base 17 is a “semicircle column-like glass” (see section [0021]). A light source 5, which may be a semiconductor laser, illuminates the sample 1 so that total reflection from a rear surface of the sample 1 occurs (see section [0023]).

The **Osawa** device includes an optical fiber probe 7 for detecting evanescent¹ light from the sample 1. An XYZ driver 11 drives an XYZ scanner 9, which scans the optical fiber probe 7 along a front face of the sample 1. The evanescent light is taken up by the point of the optical probe 7, which has a small opening. Photoelectric conversion and signal magnification are performed by a photomultiplier 13 and the result is displayed on a display 15 (see sections [0025] and sections [0002] and [0003]).

Although **Osawa** generally discloses a near-field scanning microscope, it is respectfully submitted that there are significant differences between **Osawa** and the claimed invention. First, **Osawa** does not disclose the claimed “*solid immersion lens for accepting an incident light or emitting an outgoing light, said solid immersion lens having a base plane on which a specimen is to be disposed*”². The base plane 17 on which the sample 1 is placed in **Osawa** is apparently simply hemispherical glass, and not a solid immersion lens. The Examiner recognizes that **Osawa** does not teach the solid immersion lens (see Office Action, page 4, fourth though seventh lines from the bottom of page).

Further, **Osawa** does not disclose or suggest the claimed “*antenna having a probe disposed away from said base plane of said solid immersion lens at a distance not more than 1/4 of an effective wavelength of the light*”³. The Examiner asserts that the optical fiber probe 7 or the glass probe 31 (Fig. 2) correspond to the claimed “antenna having a probe...”. However, the optical fiber probe 7 and the glass probe 31 are **not** antennas and do not function as antennas.

¹ Please note, the computer generated English translation of **Osawa** uses the term “EBANESSENTO” to describe the light that is detected from the sample 1 (see section [0022] of computer generated translation). There is no term “EBANESSENTO” in the English language. It is believed this term should be “evanescent”.

Further, the Examiner recognizes that **Osawa** does not disclose or suggest that the probe disposed away from said base plane of said solid immersion lens is *at a distance not more than 1/4 of an effective wavelength of the light* (see Office Action, page 4, fifth and sixth lines from bottom).

The Examiner relies on the **Zhang et al.** and the **Corle et al.** references to teach the solid immersion lens. See Office Action, page 4, last four lines - page 5, line 11.

Zhang et al teaches a microscope for producing an image of a target using THz radiation. The Examiner relies on col. 2, lines 13-14 and col. 11, lines 15-35 of **Zhang et al.** As shown in Figs. 4 and 5, the embodiment of **Zhang et al.** applied by the Examiner includes a sample 18 disposed on a transceiver crystal 412. A pump pulse P1 and a probe pulse P2 are transmitted through a beam splitter 442 and focused by a focal lens 415 through a hemispherical lens 428 (H1 or H2) onto the crystal 412. **Zhang et al.** teaches that the hemispherical lens H1, H2 can be a solid immersion lens (see col. 11, lines 24-26).

First, **Zhang et al.** does not teach “an antenna having a probe disposed away from said base plane of said solid immersion lens at a distance not more than 1/4 of an effective wavelength of the light”. **Zhang et al.** is completely silent with respect to the claimed antenna.

Second, **Zhang et al.** does not disclose the “solid immersion lens for accepting an incident light or emitting an outgoing light, said solid immersion lens having a base plane on which a specimen is to be disposed” because the specimen (i.e., sample 18) in **Zhang et al.** is disposed on a transceiver crystal 412.

The **Corle et al.** reference discloses a lithography system employing a solid immersion lens having a spherical surface to enhance resolution. According to **Corle et al.**, a light source 16 illuminates a photomask 17, and an objective lens 18 and solid immersion lens 19 are used to image the photomask onto the sample 21.

The Examiner relies on an embodiment described in column 3, lines 13-19 and shown in Fig. 4 of **Corle et al.**. In the embodiment shown in Fig. 4, a laser 22 is used to set up standing waves between the bottom of the solid immersion lens 19 and the sample 21. According to this embodiment, laser light reflected between the bottom of the solid immersion lens 19 and the top of the sample 21 form an interferometer. The **Corle et al.** reference teaches a “path difference of a wavelength ($\lambda/4$) will cause the interference pattern to change from bright to dark so that controlling the distance between the SIL and the sample to a few nanometers should be easily achieved by sensing the reflected light with a photodiode or the like and using the output as the input to a control system” (see col. 3, lines 13-18).

However, **Corle et al.** does not disclose or suggest the claimed “antenna having a probe disposed away from said base plane of said solid immersion lens at a distance not more than 1/4 of an effective wavelength of the light”. The path difference of $\lambda/4$ disclosed by **Corle et al.** is related to a distance between the bottom of the solid immersion lens 19 and the sample 21 to set up an interference pattern. **Corle et al.** is silent with respect to an antenna disposed away from a base plane of the solid immersion lens 19.

Further, **Corle et al.** does not disclose or suggest the claimed “solid immersion lens for accepting an incident light or emitting an outgoing light, said solid immersion lens having a base

plane on which a specimen is to be disposed”. As shown, e.g., in Fig. 4 of **Corle et al.**, the sample 21 is not disposed on the solid immersion lens 19. In contrast to the claimed invention, there is a space between the solid immersion lens 19 and the sample 21.

Therefore, none of **Osawa, Zhang et al.** and **Corle et al.** discloses or suggest the claimed “antenna …” and “solid immersion lens…”. Accordingly, the rejection of independent claim 1 is improper and should be withdrawn.

Claims 3 and 4

The Examiner applies the **Ferrell et al.** reference to teach the features recited in dependent claims 3 and 4.

First, it is submitted that **Ferrell et al.** does not alleviate any of the above-noted deficiencies of **Osawa, Zhang et al.** and **Corle et al.** Accordingly, claims 3 and 4 patentably distinguish over the cited prior art for the same reasons discussed above with respect to independent claim 1.

Second, **Ferrell et al.** discloses a near-field scanning microscope including a fiber optic probe 26 having a fiber optic probe tip 22. The fiber optic probe tip 22 is introduced into an evanescent near-field 18 such that photons will tunnel between the beam 14 at a surface 16 and the probe tip 22 (see, e.g., col. 5, lines 34-37).

The Examiner considers the fiber optic probe 26 to be an antenna (see Office Action, page 6, line 6). However, we believe that the fiber optic probe 26 disclosed by **Ferrell et al.**

suffers from the same deficiencies as the probe disclosed by **Osawa**. Specifically, the fiber optic probe 26 is not an antenna.

Moreover, it is noted that one of ordinary skill in the art would not consider a fiber optic probe, such as disclosed by **Osawa** and **Ferrell et al.** to be a type of “antenna”. More specifically, the open end of the fiber optic probe has a dimension smaller than the dimension of light to pick up the evanescent wave (see **Osawa**, paragraph [0003]; and **Ferrell**, column 2, lines 40-44). Such a fiber optic probe would not be considered an antenna because a dimension of the antenna is in the order of a wavelength.

In view of the above remarks, reconsideration and withdrawal of the rejection of claims 1-5 under §103 are respectfully requested.

CONCLUSION

In view of the foregoing amendments and accompanying remarks, it is submitted that all pending claims are in condition for allowance. A prompt and favorable reconsideration of the rejection and an indication of allowability of all pending claims are earnestly solicited.

If the Examiner believes that there are issues remaining to be resolved in this application, the Examiner is invited to contact the undersigned attorney at the telephone number indicated below to arrange for an interview to expedite and complete prosecution of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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